



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

MICROSCOPY.¹

Certain Improvements in Born's Method of Reconstructing Objects from Serial Sections.—The original method of Dr. Born was treated with considerable detail in Vol. XVIII., 1884, of the *NATURALIST*; since which time several improvements have been effected, descriptions of which have appeared from time to time. We take the following from a recent number of the *Zeitsch. für Wiss. Mikr.*, Vol. V., 1888.

The block of paraffine holding the carefully imbedded object should be cut into as perfect a prism as possible, the use of special instruments for this process being recommended. It is further advised that one of the faces at right angles to the plane of the knife should be marked in such a way as to leave no question as to its identity when the sections are cut. This marking may be brought about by the use of scoring, the lines being filled with coloring matter, and then covered in the ordinary way by dipping in warm paraffine.

The sections should have a thickness of about 1-50 mm., and the paraffine should be so prepared that it will not crush or crack before the edge of the knife.

The finally mounted sections are placed under the microscope, and by means of a camera the outlines are drawn to scale on separate pieces of paper. The thickness of each section and the amount of increase in size of the camera drawing over the original being known, it is a simple matter to determine the desired relative thickness of the wax that is to be applied to the paper bearing the drawing.

The improved method of applying the wax is as follows:

A lithographer's stone having been brushed over with turpentine, the paper is evenly spread upon it, and a strip of metal of the desired thickness is placed along each side. Wax is now poured over the paper, and, by means of an iron roller, is pressed into a layer of equal thickness with parallel strips of metal, which at the same time support the roller and limit the spread of the wax. The thicknesses recommended for the plates are 0.4, 0.6, 0.8, 0.9, 1, 1.12, 1.5, 1.8 and 2. mm. Combinations of these will give a sufficient range of thicknesses to correspond with all ordinary sections.

After the plates have all been made the careful work of removing the surplus wax should be undertaken, the drawing on the attached paper directing the work. Finally the enlarged sections are stuck together in their proper order, the model resulting.

¹ Edited by C. O. Whitman, Clark University, Worcester, Mass.

Kastschenko's Apparatus.¹—Apparatuses planned to assist in processes of plastic reconstruction have been devised by Dr. N. Kastschenko, which may be profitably used in preparing the paraffine block for ordinary ribbon cutting.

The original apparatus had for its object to pare down the sides of a paraffine block in such a way that some geometrical pattern might surround the object. This pattern or "definition line" was intended to facilitate the reproduction of the object in a magnified model from sections made.

From the author's point of view, of course it is important that the definition or boundary surfaces (which in a section of the object are seen as definition or boundary lines) should be perfectly parallel, or at any rate have a fixed and determined position. The apparatus which he advocates is intended to effect this. The two models were constructed for the Thomas-Jung and for the Spengel-Becker microtomes. They are shown in Figs. 1 and 2, their natural size. (Plate III.)

In Fig. 1 is shown the cutter or parer as constructed for the Thomas-Jung object-holder. It may, however, be fitted to any microtome with a cylindrical object-holder. Its construction is extremely simple. It consists of a stout ring *b*, the internal diameter of which is exactly equal to that of the object-holder. The ring is immovably united to the piece *a*, which in its turn is exactly like the paraffine cylinder which fits into the object-holder. In the ring is seen the binding screw *c*. The paraffine-holder *d*, which fits inside the ring, may be either solid or hollow.

The holes in *d* and *a* are for the purpose of turning round the apparatus. While the object is being pared down the part *a* is fixed firmly in the object-holder, and when the block has had its definition-surfaces thus prepared, it is removed from the cutter and fixed on the object-holder in such a way that it is cut in a direction perpendicular to the surfaces.

The second model (Fig. 2), represents an apparatus intended to be used in any ordinary object-holder, and is of such dimensions that movement in any direction when it is fixed in the clamp is possible. This "parer" fits into the apparatus *e*, which consists of two blocks of wood loosely united by short metal wires. The wooden holder of course fits into the clamp while the block is being shaved down. When the boundary surfaces have been satisfactorily adjusted to the paraffine block, the latter is removed from the "cutter" or parer, and inserted into the wooden holder wherein it is sectioned.

¹ From an abstract in the Journal of the Royal Mic. Society, February, 1889.